

2.5V Drive Nch MOSFET

TT8K2

●Structure

Silicon N-channel MOSFET

●Features

- 1) Low on-state resistance with fast switching.
- 2) Low voltage drive (2.5V).

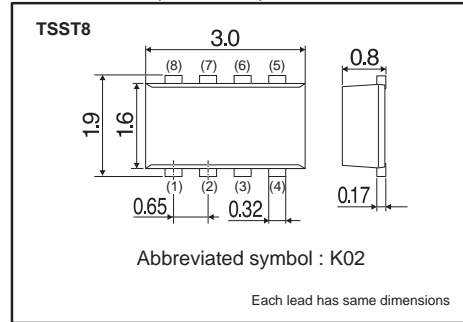
●Application

Switching

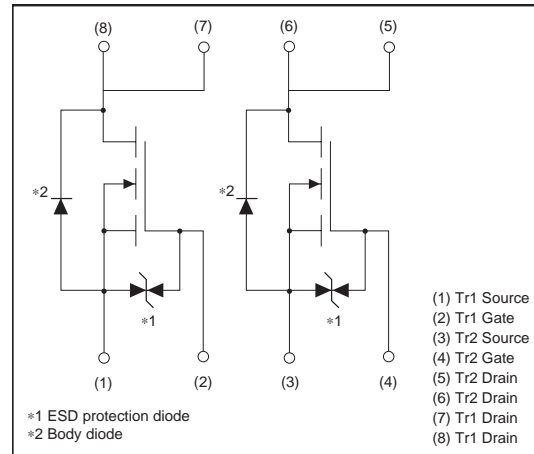
●Packaging specifications

Type	Package	Taping
	Code	TR
	Basic ordering unit (pieces)	3000
TT8K2		○

●Dimensions (Unit : mm)



●Inner circuit



●Absolute maximum ratings (Ta=25°C)

Parameter	Symbol	Limits	Unit
Drain-source voltage	V _{DSS}	30	V
Gate-source voltage	V _{GSS}	±12	V
Drain current	Continuous	I _D	±2.5 A
	Pulsed	I _{DP} *1	±10 A
Source current (Body diode)	Continuous	I _S	0.8 A
	Pulsed	I _{SP} *1	10 A
Total power dissipation	P _D *2	1.25	W / TOTAL
		1.0	W / ELEMENT
Channel temperature	T _{ch}	150	°C
Range of Storage temperature	T _{stg}	-55 to +150	°C

*1 Pw≤10μs, Duty cycle≤1%

*2 When mounted on a ceramic board

●Thermal resistance

Parameter	Symbol	Limits	Unit
Channel to ambient	R _{th} (ch-a) *	100	°C / W / TOTAL
		125	°C / W / ELEMENT

* When mounted on a ceramic board

●Electrical characteristics (Ta=25°C)

<It is the same characteristics for the Tr1 and Tr2.>

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Gate-source leakage	I _{GSS}	–	–	±10	μA	V _{GS} =±12V, V _{DS} =0V
Drain-source breakdown voltage	V _{(BR) DSS}	30	–	–	V	I _D =1mA, V _{GS} =0V
Zero gate voltage drain current	I _{DSS}	–	–	1	μA	V _{DS} =30V, V _{GS} =0V
Gate threshold voltage	V _{GS(th)}	0.5	–	1.5	V	V _{DS} =10V, I _D =1mA
Static drain-source on-state resistance	R _{DS(on)*}	–	65	90	mΩ	I _D =2.5A, V _{GS} =4.5V
		–	70	95	mΩ	I _D =2.5A, V _{GS} =4V
		–	95	130	mΩ	I _D =2.5A, V _{GS} =2.5V
Forward transfer admittance	Y _{fs} *	2.2	–	–	S	V _{DS} =10V, I _D =2.5A
Input capacitance	C _{iss}	–	180	–	pF	V _{DS} =10V
Output capacitance	C _{oss}	–	60	–	pF	V _{GS} =0V
Reverse transfer capacitance	C _{riss}	–	35	–	pF	f=1MHz
Turn-on delay time	t _{d(on)*}	–	7	–	ns	V _{DD} ≐15V
Rise time	t _r *	–	30	–	ns	I _D =1.2A
Turn-off delay time	t _{d(off)*}	–	20	–	ns	V _{GS} =4.5V
Fall time	t _f *	–	20	–	ns	R _L ≐12.5Ω
Total gate charge	Q _g *	–	3.2	–	nC	V _{DD} ≐15V, I _D =2.5A
Gate-source charge	Q _{gs} *	–	0.9	–	nC	V _{GS} =4.5V
Gate-drain charge	Q _{gd} *	–	0.4	–	nC	R _L ≐6Ω, R _G =10Ω

*Pulsed

●Body diode characteristics (Source-drain) (Ta=25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Forward voltage	V _{SD} *	–	–	1.2	V	I _S =2.5A, V _{GS} =0V

*Pulsed

●Electrical characteristics curves

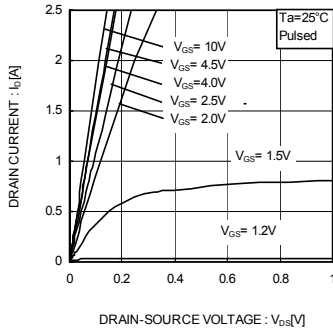


Fig.1 Typical Output Characteristics(I)

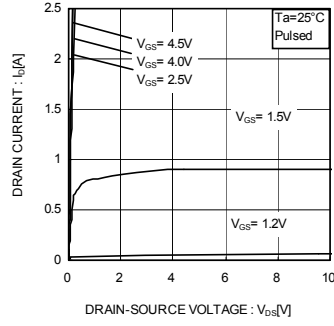


Fig.2 Typical Output Characteristics(II)

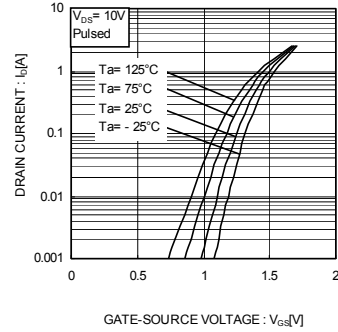


Fig.3 Typical Transfer Characteristics

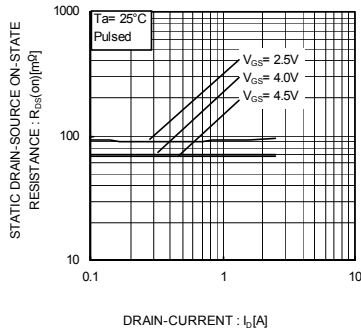


Fig.4 Static Drain-Source On-State Resistance vs. Drain Current(I)

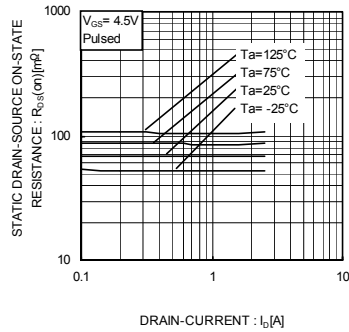


Fig.5 Static Drain-Source On-State Resistance vs. Drain Current(II)

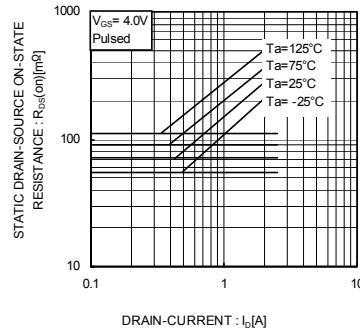


Fig.6 Static Drain-Source On-State Resistance vs. Drain Current(III)

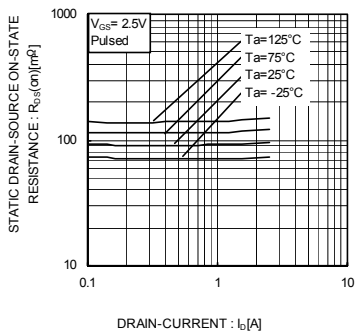


Fig.7 Static Drain-Source On-State Resistance vs. Drain Current(IV)

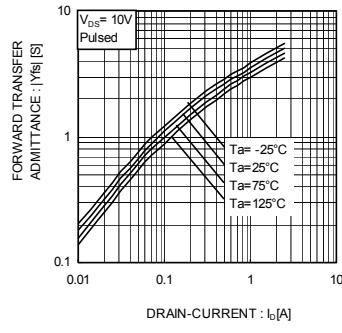


Fig.8 Forward Transfer Admittance vs. Drain Current

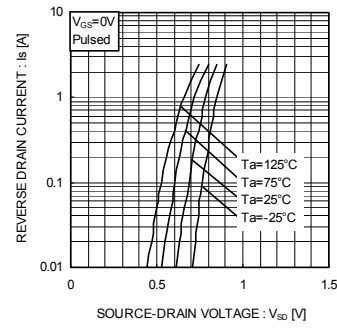


Fig.9 Reverse Drain Current vs. Source-Drain Voltage

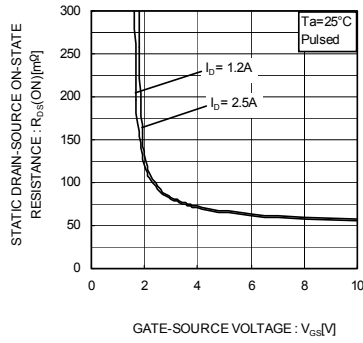


Fig.10 Static Drain-Source On-State Resistance vs. Gate-Source Voltage

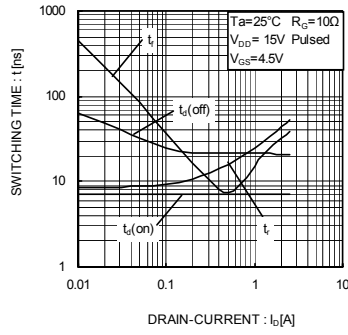


Fig.11 Switching Characteristics

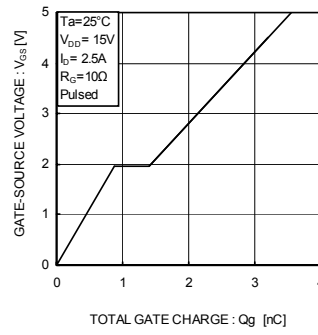


Fig.12 Dynamic Input Characteristics

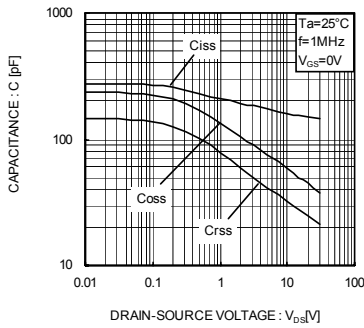


Fig.13 Typical Capacitance vs. Drain-Source Voltage

●Measurement circuits

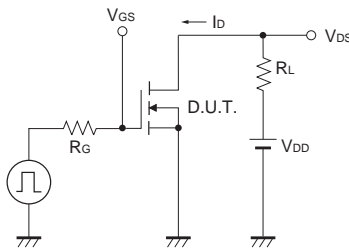


Fig.1-1 Switching Time Measurement Circuit

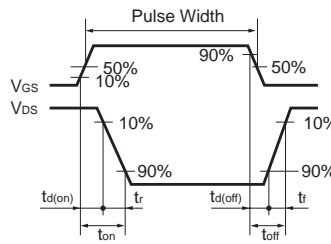


Fig.1-2 Switching Waveforms

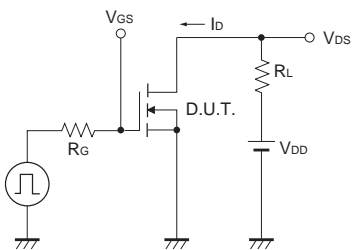


Fig.2-1 Gate Charge Measurement Circuit

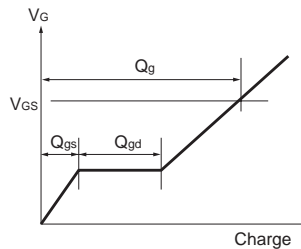


Fig.2-2 Gate Charge Waveform

●Notice

This product might cause chip aging and breakdown under the large electrified environment. Please consider to design ESD protection circuit.

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